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Philosoph Transact. No. 235

Fig: 1

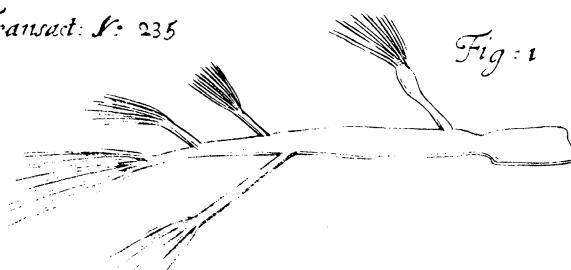
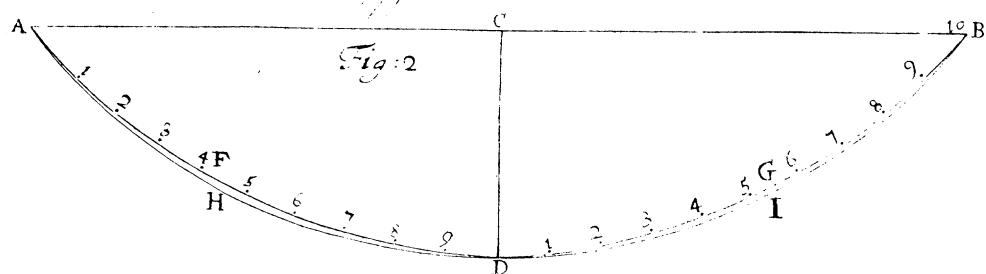


Fig: 2



in *actis Lipsiensibus* & alibi reperiuntur, quam præstantissimus ille liber (cui Titulum dedit—— *Analyse des Infiniment petits*) faciunt ut magna quæq; ab Eruditissimo Marchione expectemus.

Quodque ingeniosissimo Jo. Bernoullio visum fuerit (in *Actis Anni 1695. Mensibus Febr. & August:*) Methodum meam non esse generalem pronunciare, id etiam ego lubens agnosco, ut exemplorum meorum serie facile percipere potuerit Vir acutissimus. In materia diffcili gradus, quos poteram, feci; & si itineris Longitudine vel difficultate deterritus non ulterius tum progressus fuerim, mihi tamen (qui obiter tantum studiis hisce Mathematicis Animum adhibeo) quæ volui, sistere licebat. In quo hæreat Methodus mea partim notavit clariss. Bernoullius; rem tamen totam non prorsus assequutus videtur. Interim illi me plurimum devinatum habeo, quod suâ Animadversione Tractatum meum dignatus fuit, multò tamen magis, quod tam candide, tamq; humanè me ab erroribus meis liberare voluerit.

VI. A Letter from Mr. Stephen Gray, dated Canterbury, Dec. 8. 1697. relating some Experiments about making Concave Specula nearly of a Parabolick Figure.

I Had before this time communicated the Experiments I mentioned in the end of my Letter of the 12th of May last, had I not expected an Opportunity to have made some farther Progress than I have yet done. I shall not spend time to tell you how I have been obstructed in having my Thoughts diverted by other Affairs, yet I think it convenient to let the Society know how far I have proceeded toward the way to make the Concave Specula nearly of a Parabolick Figure, which they will naturally receive, or at least with a very little Assistance of Art, having the Ambition to think, that if any ingenious Person shall think fit

to prosecute the Inquiry, these Experiments may prove not altogether useless hints, and so ought not to be forgotten.

A Linnen Cloth being first wet in fair Water, and then laid on a Concave Cylinder, as the Verge of a Seive, Keeler, or the like, its central Parts will descend so as to form a very regular Concave Superficies, which I suspected to be Parabolical, well known to be the best of Figures, could it be obtained for Burning Glasses; in which I was not greatly deceived.

A Thread being first wet in common Water, and then suspended with its Two Ends, or any Two Points nearer than their utmost extent; so as it might touch the Center of the suspended Cloth and its Two opposite Points on the the Ring was found to have the same Curvature, as indeed could scarce be doubted, since the Cloth is but a number of Threads suspended in the Posture of this single one. My Business then was to examine the Figure of a Line suspended with its Two Ends nearer than their utmost Extent, which I did in manner following:

On the Side of a Wall I described Parabolas of several Species, whose Axes were Perpendicular and Perimeter Horizontal, to which the Line being applied so as it might touch the Vertex, past very nearly through all the intermediate Points of the Parabol, much nearer than the Portion of a Circle which past through the Extremity of the Perimeter, and *Latus Reclum* would do.

But to make what I have said more intelligible, see Figure 2. where A B is the Perimiter C D the Axis C the Focus and D the Vertex 1, 2, 3, 4, 5, the several Points in the Parabola A F D B G, the form of the suspended Line, A H D I B, a portion of a Circle, which though it pass through the Points A D B, is more remote from

from the other Points of the Parabola than the suspended Line.

From hence I conclude, that a ponderous and pliable Substance being suspended on a Ring or hollow Cylinder, so as that its Central Parts my descend, will form it self into a Figure that is more commodius for Burning-Glasses than the Spherical, of which they are now made, being much nearer their most absolute Figure the Parabola.

Now if there may be a way found to give to Cloth or Leather a Metalline Surface, or a Varnish that may bear a good Pollish ; or if this be found impracticable, perhaps Plates of Metal may be beat out so thin, as being suspended on a large Ring, will by their own Gravity receive their true Figure, one may make Speculums of what Largeness he pleaseth, and there will be another Property in them, which makes it very desirable, that one and the same Speculum will be mutable into all Degrees of Concavity, and so have its focal Length increased or diminished, according to the Purpose 'tis designed for.

Not long after I had made these Observations, I devised the following Experiment.

There was taken a sufficient Quantity of Potters-Clay, of which there was formed a plain Circular Plate, by help of an Iron Ring about 13 Inches Diameter. This was laid on a lesser Ring, which was supported by Four Feet, and it immediately became of a very regular Concave on its upper, and Convex on its under Superficies : but notwithstanding 'twas set to drie in the Shade, yet before it was dry enough, its Central Parts extended so as to become almost plain, not without some Defects ; if it had continued in its Regularity, I designed to have burned and glazed it in a Potters Furnace. But I have since had a Concave Plate of Clay, which I formed by

and glazed, but found the Glass to flow more inequally than I expected, though the Potter tells me 'twas caused by the Foulness of the Earth I used.

VII. Part of a Letter of Mr. Anthony van Leeuwenhoeck, dated Delft, Sept. 10. 1697. Concerning the Eggs of Snails, Roots of Vegetables, Teeth, and Young Oysters.

MR. Friderick Walfert from *Overwie*, about Two Years ago brought me some little White Round Eggs, mixt with dry Earth, in which Earth the Eggs were found, and whose Axis was almost the Fifteenth Part of an Inch, together with a Desire to inquire what living Creature would come out of them.

I did separate some of these Eggs, and found a thin Moisture in them, mixt with round Bubbles; the rest of the Eggs I included in a Glass, but the internal Matter dried in a few Days away, and the White Membrane of the Eggs (which was very tender and soft) wrinkled together, by drying away the Moisture, so that no living Creature did come out of them.

The Year following, the fore-mentioned Friend brought me again some of these Eggs, with which I did as before, but I did not get any thing out of them.

Now in the begining of the Month of *July*, the same Friend brought me a greater Quantity of these Eggs, that was mixt with a Handful of wet Earth.

In the mean time it came into my Mind, if the drying away of the Moisture of these Eggs was not the Reason of their not bringing forth a living Creature, because the Eggs being in a dry Earth, grew fruitless, and that the Nature of those Eggs required a moist Earth, and for that Reason